

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims

1-24. (cancelled)

25. (currently amended) An intravascular occlusion balloon catheter, comprising:

an elongate tubular shaft having a hub end and a balloon end, wherein the hub end is the end that normally remains outside a human body and the balloon end is the end of the shaft that extends furthest into the human body;

a removable hub connected to the hub end of the shaft;

an inflatable occlusion balloon disposed near the balloon end of the shaft; and

means for selectively venting air from the balloon, the means disposed between the balloon and the hub end of the shaft.

26. (previously presented) An intravascular occlusion balloon catheter as in claim 25, wherein the venting means comprises:

an annular ring disposed about the balloon end of the shaft; and

an intermediate tube fixedly attached to the balloon and movably disposed about the annular ring, the intermediate tube and the annular ring forming a seal, the intermediate tube having a vent hole, wherein a vent path is opened through the intermediate tube and the vent hole when the hole is positioned on the side of the annular ring closest to the balloon end of the shaft, and the vent path is closed when the vent hole is positioned on the side of the annular ring closest to the hub end of the shaft.

27. (previously presented) An intravascular occlusion balloon catheter as in claim 25, wherein the venting means comprises:

an intermediate tube disposed between the balloon and the balloon end of the shaft, the tube having an inflation lumen and a vent lumen; and

a re-sealable material disposed in the vent lumen, wherein a vent path is opened when a

needle is disposed through the re-sealable material, and the vent path is closed when the needle is removed from the re-sealable material.

28. (previously presented) An intravascular occlusion balloon catheter as in claim 27, wherein the intermediate tube comprises a side-by-side dual lumen tube.

29. (previously presented) An intravascular occlusion balloon catheter as in claim 27, wherein the intermediate tube comprises an inner tube coaxially disposed in an outer tube and the vent lumen comprises an annular lumen therebetween.

30. (previously presented) An intravascular occlusion balloon catheter as in claim 25, wherein the venting means comprises:

a vent lumen extending from the balloon to a vent port; and

a sleeve slidably and coaxially disposed near the shaft balloon end, the sleeve having a first position for occluding the vent port and a second position for allowing airflow from the vent port.

31. (previously presented) An intravascular occlusion balloon catheter as in claim 30, wherein the sleeve has a length, the venting means further comprising a first seal disposed on the side of the vent port closest to the hub end of the shaft and a second seal disposed on the side of the vent port closest to the balloon end of the shaft, the first and second seals disposed a distance apart less than the sleeve length, the first and second seals having a height sufficiently small to fit between the sleeve and the shaft when the sleeve is in the first position.

32. (currently amended) An intravascular occlusion balloon catheter, comprising:

an elongate tubular shaft having a hub end and a balloon end, wherein the hub end is the end that normally remains outside a human body and the balloon end is the end of the shaft that extends furthest into the human body;

a removable hub connected to the hub end of the shaft;

an inflatable occlusion balloon disposed near the balloon end of the shaft, the balloon having an interior; and

a vent pathway disposed on the balloon end of the shaft, the vent pathway in fluid communication with the interior of the balloon for selectively venting air from the balloon, and the vent pathway disposed between the balloon and the hub end of the shaft.

33. (previously presented) An intravascular occlusion balloon catheter as in claim 32, further comprising:

an annular ring disposed about the balloon end of the shaft; and

an intermediate tube fixedly connected to the balloon and movably disposed about the annular ring, the intermediate tube forming a seal with the annular ring, the intermediate tube having a vent hole therein, wherein the vent pathway is defined from the interior of the balloon, between the intermediate tube and the shaft to the annular ring, and through the vent hole; and

wherein the vent pathway is open when the vent hole is positioned on the side of the annular ring closest to the balloon end of the shaft and the vent pathway is closed when the vent hole is positioned on the side of the annular ring closest to the hub end of the shaft.

34. (previously presented) An intravascular occlusion balloon catheter as in claim 32, further comprising:

an intermediate tube disposed between the balloon and the balloon end of the shaft, the tube having an inflation lumen and a vent lumen; and

a re-sealable material disposed in the vent lumen, wherein the vent pathway is defined from the interior of the balloon and through a removable needle disposed in the re-sealable material, and wherein the vent pathway is opened when a needle is disposed through the re-sealable material, and the vent pathway is closed when the needle is removed from the re-sealable material.

35. (previously presented) An intravascular occlusion balloon catheter as in claim 34, wherein the intermediate tube comprises a side-by-side dual lumen tube.

36. (previously presented) An intravascular occlusion balloon catheter as in claim 34, wherein the intermediate tube comprises an inner tube coaxially disposed in an outer tube and the vent lumen comprises an annular lumen therebetween.

37. (previously presented) An intravascular occlusion balloon catheter as in claim 32, further comprising a sleeve slidably and coaxially disposed near the shaft balloon end, wherein the vent pathway extends from the balloon through a vent lumen and through a vent port, the sleeve having a first position for occluding the vent pathway and a second position for allowing airflow through the vent pathway.

38. (previously presented) An intravascular occlusion balloon catheter as in claim 37, wherein the sleeve has a length, further comprising a first seal disposed on the side of the vent port closest to the hub end of the shaft and a second seal disposed on the side of the vent port closest to the balloon end of the shaft, the first and second seals disposed a distance apart less than the sleeve length, the first and second seals having a height sufficiently small to fit between the sleeve and the shaft when the sleeve is in the first position.

39. (currently amended) An intravascular occlusion balloon catheter, comprising:
an elongate tubular shaft having a proximal end and a distal end;
a removable hub connected to the proximal end of the shaft;
an inflatable occlusion balloon disposed near the distal end of the shaft, the balloon having an interior; and
a vent pathway disposed on the distal end of the shaft proximal the balloon, the vent pathway in fluid communication with the interior of the balloon for selectively venting air from the balloon.

40. (previously presented) An intravascular occlusion balloon catheter as in claim 39, further comprising:

an annular ring disposed about the distal end of the shaft; and
an intermediate tube fixedly connected to the balloon and movably disposed about the annular ring, the intermediate tube forming a seal with the annular ring, the intermediate tube having a vent hole therein, wherein the vent pathway is defined from the interior of the balloon, between the intermediate tube and the shaft to the annular ring, and through the vent hole; and
wherein the vent pathway is open when the vent hole is positioned on the distal side of

the annular ring and the vent pathway is closed when the vent hole is positioned on the proximal side of the annular ring.

41. (previously presented) An intravascular occlusion balloon catheter as in claim 39, further comprising:

an intermediate tube disposed between the balloon and the distal end of the shaft, the tube having an inflation lumen and a vent lumen; and

a re-sealable material disposed in the vent lumen, wherein the vent pathway is defined from the interior of the balloon and through a removable needle disposed in the re-sealable material, wherein the vent pathway is opened when a needle is disposed through the re-sealable material, and the vent path is closed when the needle is removed from the re-sealable material.

42. (previously presented) An intravascular occlusion balloon catheter as in claim 41, wherein the intermediate tube comprises a side-by-side dual lumen tube.

43. (previously presented) An intravascular occlusion balloon catheter as in claim 41, wherein the intermediate tube comprises an inner tube coaxially disposed in an outer tube and the vent lumen comprises an annular lumen therebetween.

44. (previously presented) An intravascular occlusion balloon catheter as in claim 39, further comprising a sleeve slidably and coaxially disposed near the shaft distal end, wherein the vent pathway extends from the balloon through a vent lumen and through a vent port, the sleeve having a first position for occluding the vent pathway and a second position for allowing airflow through the vent pathway.

45. (previously presented) An intravascular occlusion balloon catheter as in claim 44, wherein the sleeve has a length, further comprising a first seal disposed proximal of the vent port and a second seal disposed distal of the vent port, the first and second seals disposed a distance apart less than the sleeve length, the first and second seals having a height sufficiently small to fit between the sleeve and the shaft when the sleeve is in the first position.